

IN THE CLAIMS:

Please amend claims 1-25 as follows:

1. (Currently Amended) ~~Fuel—An integrated fuel cell and integrated circuit device~~cell,
with comprising:

a semiconductor substrate;

a fuel cell, located on the semiconductor substrate and comprising

a first electrode (3) and a second electrode configured to define a reaction region (4), where one of which the first and the second electrodes is formed as the a cathode and the other is as the an anode;

a layer (5) that is permeable at least to protons and is configured to permit, with catalytic activity, or an additional catalytic material in the region the layer positioned between the first electrode (3) and the second electrode (4);

a fuel delivery device configured to provide a fuel (H_2), the fuel delivery device positioned on a side of the first electrode; and

a reactant delivery device configured to provide a reactant (O_2), which where the reactant reacts with protons from the fuel (H_2) to generate current, with the fuel delivery device and the reactant delivery device being positioned on the side of the first electrode and on the side of the second electrode, respectively;

where the fuel (H_2) is integrated into the material of at least one of the first electrode electrodes (3) formed as the fuel delivery device (3) and/or of an adjacent layer adjacent to it.

2. (Currently Amended) ~~Fuel~~ The integrated fuel cell and integrated circuit device ~~cell~~ according to ~~of~~ Claim claim 1, where in which the fuel delivery device (3) ~~further~~ comprises a contacted material that is treated with the fuel.

3. (Currently Amended) ~~Fuel~~ The integrated fuel cell and integrated circuit device ~~Fuel cell~~ according to ~~of~~ Claim claim 1, where in which the fuel delivery device (3) ~~further~~ comprises palladium (Pd).

4. (Currently Amended) ~~Fuel~~ The integrated fuel cell and integrated circuit device ~~cell~~ according to ~~of~~ claim 1, where in which hydrogen (H_2) is integrated into the fuel delivery device (3) ~~as~~ the fuel.

5. (Currently Amended) ~~Fuel~~ The integrated fuel cell and integrated circuit device ~~cell~~ according to ~~of~~ claim 1, where in which the reactant ~~infeed-delivery device for the infeed of the reactant (O_2)~~ further comprises ~~the a~~ a space surrounding at least one of the second electrode ~~or and the space surrounding the reaction region.~~

6. (Currently Amended) The integrated fuel cell and integrated circuit device ~~fuel cell~~ of claim 1, further comprising an electrical circuit (7; 16).

7. (Currently Amended) The integrated fuel cell and integrated circuit device ~~fuel cell~~ of claim 6, where the electrical circuit comprises a CMOS circuit.

8. (Currently Amended) The integrated fuel cell and integrated circuit device ~~fuel-cell~~ of claim 1, further comprising: a control device (17; 27) for controlling at least one of a current flow ~~or~~ and an energy infeed.

9. (Currently Amended) The integrated fuel cell and integrated circuit device ~~fuel-cell~~ of claim 1, further comprising: a control device to at least one of activate an electrochemical reaction between the electrodes and complete an electrical circuit through the electrodes ~~a control device (17; 27) to activate the electrochemical reaction in the fuel cell (1) or to complete the electrical circuit through the electrodes (3, 4) of the fuel cell (1).~~

10. (Currently Amended) The integrated fuel cell and integrated circuit device ~~fuel-cell~~ of ~~claim 9, where in which~~ the control device (27) further comprises a closed closure device, wherein the space around ~~the~~ a reaction region of the reactant (O_2) ~~has no reactant, and wherein reactant from an external space enters the reaction region by opening the closure device (27).~~

11. (Currently Amended) The integrated fuel cell and integrated circuit device ~~fuel-cell~~ of claim 1, where ~~at least the fuel cell being designed~~ is configured as a replaceable module.

12. (Currently Amended) The integrated fuel cell and integrated circuit device ~~fuel-cell~~ of claim 1, further comprising: a fuel sensor (18) ~~that is positioned in at least one of the fuel delivery device (3) and/or in the reaction region between the protons and the reactant, the fuel sensor configured to determine the an available or current amount of fuel.~~

13. (Original) Method A method for manufacturing an integrated fuel cell and integrated circuit device, comprising: in which

positioning a proton-permeable layer between a first electrode (3), and a second electrode (4), and ~~at~~ the proton-permeable layer (5) with ~~configured to permit~~ catalytic activity separating them are produced, or in addition to the layer (5) a catalytic material is produced between the electrodes (3, 4);

characterized in that

configuring a fuel delivery device as an integral part of one of the electrodes; and

treating a material of the fuel delivery device with fuel.

a fuel delivery device is produced as an integral part of one of the electrodes (3) or as a layer adjacent to it, with the material of the fuel delivery device being treated with fuel during its preparation or thereafter.

14. (Currently Amended) A integrated fuel cell and integrated circuit device~~fuel cell,~~ comprising:

a semiconductor substrate;

a fuel cell, located on the semiconductor substrate and comprising

a first electrode (3) and a second electrode ~~configured to define a reaction region~~ (4), ~~where one of the first and the second electrodes is a cathode and the other is an anode~~ one of which is formed as the cathode and the other as the anode;

a layer that is permeable at least to protons and is configured to permit catalytic activity, the layer positioned between the first electrode and the second electrode;

~~a layer (5) that is permeable at least to protons, with catalytic activity or an additional catalytic material in the region between the first electrode (3) and the second electrode (4);~~

a fuel delivery device configured to provide fuel, the fuel delivery device positioned on a side of the first electrode; and

a fuel delivery device to provide a fuel (H_2); and

a reactant delivery device configured to provide a reactant (O_2), where the reactant which reacts with protons from the fuel (H_2) to generate current, with the fuel delivery device and the reactant delivery device being positioned on the side of the first electrode and on the side of the second electrode, respectively;

where the reactant for generating a quantity of current is integrated into the material of at least one of the second electrode and an adjacent layer;

where the reactant (O_2) for generating a given amount of current is integrated into the material of one of the electrodes produced as a reactant delivery device (3) and/or in a layer adjacent to it;

~~and where the fuel cell is designed so that only reactant from this~~ the reactant delivery device can react with the fuel.

15. (Currently Amended) ~~Fuel~~ The integrated fuel cell and integrated circuit device ~~cell~~ according to ~~of~~ Claim claim 14, where in which the reactant delivery device (3) further comprises a contacted material that is treated with the reactant.

16. (Currently Amended) ~~Fuel~~ The integrated fuel cell and integrated circuit device cell according to ~~Claim claim~~ claim 14, where in which oxygen (O_2) is integrated into the reactant delivery device.

17. (Currently Amended) The integrated fuel cell and integrated circuit device fuel-cell of claim 14, further comprising an CMOS electrical circuit electrically coupled to at least one of the electrodes ~~(7; 16)~~.

18. (Currently Amended) The integrated fuel cell and integrated circuit device fuel-cell of claim 17, further comprising: a control device ~~(17; 27)~~ for controlling at least one of a flow of current ~~or and~~ an infed of energy.

19. (Currently Amended) The integrated fuel cell and integrated circuit device fuel-cell of claim 17, further comprising a control device ~~(17; 27)~~ for at least one of activating ~~the an~~ electrochemical reaction ~~in the fuel cell (1) between the electrodes or and~~ for completing the an electrical circuit through the electrodes ~~(3, 4) of the fuel cell (1)~~.

20. (Currently Amended) The integrated fuel cell and integrated circuit device fuel-cell according to ~~Claim claim~~ claim 19, where in which the control device ~~(27)~~ further comprises a closed closure device, wherein the space around the reaction region of the fuel with the reactant (O_2) has no fuel, and wherein fuel from ~~the an~~ an external space enters the reaction region by opening the closure device ~~(27)~~.

21. (Currently Amended) The integrated fuel cell and integrated circuit device fuel-cell of claim 17, wherein at least the fuel cell is configured as a replaceable module.

22. (Currently Amended) The integrated fuel cell and integrated circuit device fuel-cell of claim 21, further comprising: a reactant sensor (18) that is positioned in at least one of the reactant delivery device (3) and/or in the reaction region between the protons and the reactant, the reactant sensor configured to determine the an available or current amount of reactant.

23. (Currently Amended) The integrated fuel cell and integrated circuit device fuel-cell of claim 21, further comprising: a circuit for at least one of measuring the resistance of one of the fuel delivery device or of and the reactant delivery device (3), for and determining the remaining amount of one of fuel or of and reactant.

24. (Currently Amended) ~~Method~~ A method for manufacturing an integrated fuel cell and integrated circuit device, comprising: ~~in which~~

depositing a proton-permeable layer between a first electrode (3) and a second electrode (4), and a the proton-permeable layer (5) with configured to permit catalytic activity separating them are produced, or in addition to the layer (5) a catalytic material is produced between the electrodes (3, 4);

characterized in that

depositing a reactant delivery device as an integral part of one of the electrodes; and

treating a material of the reactant delivery device with reactant.

a reactant delivery device is produced as an integral part of one of the electrodes (3) or as a layer adjacent to it, with the material of the reactant delivery device being treated with reactant during its preparation or thereafter.

25. (Currently Amended) The integrated fuel cell and integrated circuit device of claim 21, further comprising: a measuring device (30) for~~configured to determining determine~~
~~the at least one of strength of the~~ current or the and a voltage generated by the fuel cell as a
~~measured variable parameter for the~~ reaction between the fuel and the reactant (O₂).